

{ Northrup (W. P.)
+
CRANDALL (F. M.)

al

SCORBUTUS IN INFANTS.

BY

WILLIAM P. NORTHRUP, M. D.,

Adjunct Professor of Diseases of Children in Bellevue
Hospital Medical College; Attending Physician to the
Presbyterian, Foundling, Willard Parker, and
Riverside Hospitals; Consultant Physician
to the New York Infant Asylum,

AND

FLOYD M. CRANDALL, M. D.,

Secretary of the Pædiatric Section, New York Academy of
Medicine; Lecturer on Diseases of Children,
New York Polyclinic.

REPRINTED FROM THE

New York Medical Journal

for May 26, 1894.



SCORBUTUS IN INFANTS.*

By WILLIAM P. NORTHRUP, M. D.,

ADJUNCT PROFESSOR OF DISEASES OF CHILDREN

IN BELLEVUE HOSPITAL MEDICAL COLLEGE;

ATTENDING PHYSICIAN TO THE

PRESBYTERIAN, FOUNDLING, WILLARD PARKER, AND RIVERSIDE HOSPITALS;

CONSULTANT PHYSICIAN TO THE NEW YORK INFANT ASYLUM,

AND FLOYD M. CRANDALL, M. D.,

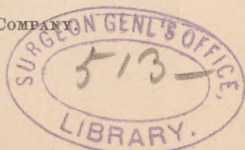
SECRETARY OF THE PÆDIATRIC SECTION, NEW YORK ACADEMY OF MEDICINE;

LECTURER ON DISEASES OF CHILDREN, NEW YORK POLYCLINIC.

THE first-mentioned writer, when he saw at the Foundling Asylum in 1889 a child suffering from scurvy, groped among several diseases for an explanation of the symptoms. No diagnosis having been made, the baby was not treated for scurvy, and, not being treated for scurvy, it died. The post mortem findings revealed the true nature of the disease. This was the first case of undoubted scorbutus in an infant recorded in the medical literature of the United States, and it is yet the only case completed by a full autopsy record. A few cases of cachexia thought to be scorbutic had been seen by Jacobi and Forchheimer, but had never found their way into indexed literature.

Two years later the writer met with a typical case in

* Based on a paper read by Dr. Northrup before the New York Academy of Medicine, February 15, 1894, and on clinical material collected and edited by Dr. Crandall.



consultation. This was in rich surroundings, was instantly recognized, treated, and quickly cured. These two cases compass the entire field. One, a foundling undiagnosed, came to autopsy, showing typical lesions. The second, early diagnosed and promptly treated, was better in a few days, and well in a month. The first might be an institution curiosity, but the second brought the disease into the field of the general practitioner.

Being suspicious that scurvy might be of occasional occurrence in general practice, the same writer, in 1891 set about finding cases like the two in his possession. The surgeon general's office could furnish but one possible but not typical case. In New York and vicinity seven well marked cases, by dint of search, were added to the two, also two more less definite—making a total of eleven. These eleven cases were reported in a paper read before the American Paediatric Society in September, 1891.

The important features in the pathological anatomy of scurvy are well illustrated in the asylum case already referred to. The gums showed the characteristic signs of hæmorrhagic gingivitis, being dark, spongy, and bloody. The main interest otherwise lay in the condition of the legs. The left thigh was symmetrically enlarged, but both thighs were above normal in size. The femur was normal at its upper extremity. The lower half was invested with a black, grumous, subperiosteal layer of blood. The lower epiphysis was detached and the lower end of the shaft macerated, eroded, and soft, lying loose in the black, disintegrating blood clot. The tibiæ were surrounded by thin, dark, hæmorrhagic layers beneath the periosteum, and the proximal portions of both were congested. The fibulæ and the bones of the upper extremities were normal. The accompanying illustration was drawn from a specimen which consisted of a lateral half of the lower limb of

the less affected side. Microscopical examination of the bone disclosed no syphilitic or rachitic changes, and no inflammatory changes in bone or periosteum. The softened, macerated bone gave no evidence of suppuration, but there was moderate congestion of the femur and the upper extremity of the tibia.

All the lesions of scurvy are hæmorrhagic in character, due probably to diapedesis. The most characteristic are subperiosteal hæmorrhages, chiefly of the long bones. The femora are most commonly affected and there is a tendency to separation of the epiphyses. Hæmorrhages into the mucous surfaces are usually present, the gums being chiefly affected, presenting a condition to which the term hæmorrhagic gingivitis may be appropriately applied. Deep hæmorrhages into the muscles are also of frequent occurrence. Eustace Smith believes subperiosteal hæmorrhage to be the most characteristic lesion of the disease. Strümpell says that deep extravasations are the peculiari-



A vertical section of the thigh and leg in a case of infantile scorbutus (Case 2 in the table). The dark areas along the femur and tibia represent subperiosteal hæmorrhage. (Drawn from a specimen preserved in the museum of the College of Physicians and Surgeons.)

ty of scurvy, and that next in importance is the peculiar condition of the gums and mucous membrane of the mouth.

That infantile scurvy is not simply a rare curiosity among diseases is proved by the fact that at a meeting of the Academy of Medicine on February 15th a hundred and six cases were reported. Eight cases have since been added to the list, making a total of a hundred and fourteen authentic cases. Dr. Louis Starr, of Philadelphia, in a communication read at this meeting, reported thirteen cases, all in private practice and in the best of surroundings. All the patients recovered except one. The autopsy findings in that case were identical with those reported in this article. Dr. Forchheimer, of Cincinnati, in a communication read at the same meeting, reported ten cases. He believed that the diagnosis rested upon the hæmorrhagic nature of the symptoms, and that all conditions classed under the head of purpura, peliosis, etc., were in fact scorbutic in nature. He referred to the peculiar muddy complexion which was common in these cases, and laid especial stress upon the result of treatment as an important point in the diagnosis. Dr. Rotch, of Boston, had seen nearly forty cases. He was in serious doubt whether such a disease as acute rhachitis existed. Some of his cases had been superadded to rhachitis. After recovery of the scurvy, the rhachitis took the usual slow course. Dr. Blackader, of Montreal, and Dr. Booker, of Baltimore, had not met with scurvy in infants.

There is without doubt some uncertainty regarding both the true nature of scurvy and its true causes. There are probably certain obscure hæmorrhagic conditions which are scorbutic in character. The ordinary cases, however, present a remarkably uniform collection of symptoms. A case which occurred in the practice of one of the writers

presented the following very typical history of scurvy in an early stage :

A male child of thirteen months had been nursed for three months. It was then weaned and fed on cow's milk for four months, then on Nestlé's food, then on Mellin's food with a small proportion of milk, and finally for six weeks, at the advice of a friend, almost exclusively on prepared barley. For several weeks the baby had been fretful and cross and for two weeks had been especially irritable and had evinced pain when handled. It was inclined to lie quiet and was irritable when disturbed. Blood had been noticed twice on the lips, but had been attributed to injury from a rough nipple. Swelling above the right knee had been noticed for twenty-four hours and it was remembered that the child had not moved the leg naturally for several days.

On examination, the child was found to be anæmic and showed moderate signs of rickets. There were four teeth. The gums around each tooth were dark red and spongy, and, on pressure, bled slightly. The slightest movement caused the child to cry out with pain, and this was most marked when the hips or legs were moved or pressed upon. The right thigh was considerably swollen, the skin being tense and slightly red. It was excessively sensitive to pressure, but did not pit. There was also slight tenderness at the hip. The child was drawn up in a peculiar attitude with the legs flexed. On the leg there were one or two spots slightly discolored, but there was no distinct purpura. The treatment consisted solely of top milk, beef juice, and orange juice. Improvement in the gums was noticed in two days. The soreness rapidly decreased, and there was complete recovery from all other symptoms in less than three weeks.

Of the hundred and fourteen cases referred to, a detailed history has been obtained in thirty-six. These histories are presented in the accompanying table. It has been impossible to enter all the details in many of the histories. Certain facts are referred to, therefore, which do not appear in the table.

Sex is referred to in thirty-two cases—sixteen being males, sixteen females. The youngest patient was four months old, the oldest was an idiot of six years. Twenty-eight children (seventy-nine per cent.) were between eight months and eighteen months; twenty-two children (sixty-three per cent.) were between nine months and thirteen months. The disease is most common, therefore, at about the end of the first year of life.

Investigation of the surroundings and social condition shows that twenty-six patients were seen in private practice and ten in institutions or dispensaries. In fourteen the surroundings were stated as being excellent, rich, or luxurious. In but two cases were the surroundings of private patients stated as especially bad. The surroundings of institution patients were especially poor in five instances. Ten of these children lived in the country or in small towns. It is evident that scurvy is not essentially a disease of large cities, and especially not of tenement house regions. Unhygienic surroundings in themselves are clearly not an important feature in its production. Some of the worst cases reported occurred in families in which the children received the most painstaking care. Other causes must therefore be sought.

The most evident and probably the most active cause of scurvy is improper diet. The exact diet is known in thirty-three cases. We find that twelve of these children (thirty-six per cent.) were fed on a proprietary food exclusively; six (eighteen per cent.) had received an exclusive diet of condensed milk or evaporated cream, while three received a combination of these two foods. Over sixty-three per cent., therefore, were fed upon a diet of proprietary foods and condensed milk. Two children received sterilized milk exclusively and three a weak mixture of milk and water. One was fed on condensed milk, one on boiled

and peptonized milk, one on barley water. Two were asylum babies who were "boarded out." In only one was fresh milk the exclusive diet, but it was not stated whether it was given pure or diluted. It is seen, therefore, that improper methods of feeding were pursued in every case with perhaps a single exception. *The experience of most observers agrees with the facts here presented, that the exclusive use of a proprietary food or of evaporated milk is the most common accompaniment of scurvy.* No one food seems to be a special offender, except as it is more generally used. The one food which is probably the most largely used in this country was mentioned most frequently. Should it come into general use it would no doubt obtain the monopoly on scurvy, though it would probably not exhibit its scurvy cases in its public advertisements.

Sterilized milk also is believed by some to be capable of producing scurvy. The evidence seems to be undoubted that milk sterilized for a long time at a high temperature has caused this disease. The statement made by Holt, that in three great institutions of New York city where infants are fed almost exclusively on sterilized milk not a single case of scurvy has developed in five years, would seem to show that where this process is not carried to an unreasonable degree no danger is to be apprehended. No such charge has been made against Pasteurized milk, which is a safer food for a variety of reasons. Sterilized milk requires as careful modification as raw milk. If it is not properly modified it may cause serious disturbance. It is possible, as suggested by Winters, that lack of proper preparation has been a factor in certain cases as well as the sterilization. Sterilized milk has proved too valuable a food in large cities to be thoughtlessly set aside until it is positively proved to be unsafe. Weak milk mixtures seem

to have been a causative factor in three cases. One of these, a child of eleven months, was fed upon nothing but milk diluted with an equal amount of water. Winters has recently drawn special attention to the fact that an excessively weak mixture may be an active cause of the disease.

Anæmia was definitely noted as present in fifteen cases, and as not present in but one case. Metallic pallor or extreme sallowness was observed four times. The nutrition was noted as good in four cases. Malnutrition was specially noted seven times, and marasmus seven times.

Rhachitis was referred to nineteen times. It was to a marked degree present in five cases, and slight rhachitis in six. It was definitely not present in eight cases. In several instances the scurvy was referred to as being ingrafted upon or added to the rickets. When the symptoms of scurvy disappeared under treatment, the rhachitic condition remained unchanged and disappeared slowly. Those who have seen most scurvy seem to be most skeptical as to the existence of such a disease as acute rhachitis. In some cases it is certain that the condition described under that name is, in fact, scurvy superadded to rickets.

The condition of the bowels was referred to in nine cases. Diarrhœa was present in six; constipation in two. In one case they were regular. Diarrhœa has been especially noticed by Carr.

Fever was frequently noted, and was commonly intermittent in character. It rarely went above 101° , but occasionally reached 103° . It seemed in many instances to be an integral part of the disease, but sometimes it seemed clearly due to other causes.

Pseudo paralysis is an interesting and very important symptom, which may readily mislead the unwary. In a paper read before the Academy of Medicine, Dr. Henry

Ling Taylor reported two marked cases. He believed that essential paralysis could not be attributed to scurvy, but that the condition was due to the pain caused by contraction of the muscles on their tender periosteal attachments. This might become so intense that all motion would be instinctively avoided. When joint irritation existed, there would be local reflex muscular rigidity, which would also operate to prevent motion. It was to be distinguished from other paralytic affections by the accompanying symptoms of scurvy, normal knee reflexes, and speedy subsidence on antiscorbutic diet. The spine and upper extremities were sometimes affected, but more commonly the lower extremities were alone involved. Pseudo-paralysis was definitely present in nine cases. It involved one leg in one case, both legs in three, legs and arms in one. Two children were reported as perfectly helpless, and in two cases the location was not stated. In no instance did the paralysis persist after the subsidence of the scorbutic symptoms. The diagnosis of infantile paralysis had been made in no fewer than three of these cases, and one had been treated for some time by electricity.

Pain was more common than any other symptom. It was, in fact, present in every patient in whom its presence or absence was noted. It was specified as in the legs in ten cases and in the arms in three. It was usually severe and often so excessive as to cause the child to scream out with fear at the approach of the attendants. It was commonly marked only upon motion or handling. The child suffering from scurvy is therefore inclined to lie quietly in any position in which it is most comfortable. As a rule, the legs are slightly flexed.

Passages of blood were noted from the stomach in two cases, from the bowels in four, from the nose in two, and from the bladder in two; it was definitely noted as not pres-

ent in but three patients. In the remaining cases no mention was made of this symptom.

Subcutaneous hæmorrhages were noted in at least fifteen cases; "purpura" was observed seven times; "petechiæ," three times; "ecchymoses," five times. In one child a vaccination scar two months old became ecchymotic. In three cases hæmorrhage took place in the eyelids, causing "black eye," and adding greatly to the wretched appearance of the little sufferer.

The condition of the gums was noted in thirty two cases. In two instances there were no teeth, and the gums were neither spongy nor bleeding. This peculiarity has been recorded by numerous observers. When a few teeth only have appeared, the changes in the gums are, as a rule, limited to the gums bordering these teeth. In twenty-four cases the gums were described as spongy, inflamed, or purple. In three cases they were described as ulcerated, and in three as simply bleeding. Actual bleeding of the gums was noted in nineteen cases. The condition of the gums was therefore one of the most constant and characteristic symptoms.

Swelling of the extremities was noted in thirty-three cases. The skin over the swelling was, as a rule, tense and shining; it was often purplish or livid, but sometimes appeared normal in color; it was of normal temperature, and did not pit on pressure. As the swelling subsided, thickening of the shaft of the bone was in some instances detected. Liability to fracture at the epiphyses was a marked feature.

In ten cases both legs were said to be involved, and in one one leg, but the exact location of the swelling was not mentioned. In the remaining twenty two cases in which the exact location was noted the thigh was involved sixteen times, the leg below the knee thirteen times, the ankle five

times, the knee four times, and the arm three times. The accompanying table shows the various locations of the lesions :

One thigh.....	4
Both thighs	4
Both thighs and legs.....	3
Both thighs, legs, and forearms.....	2
One thigh and one knee	1
One thigh and one ankle.....	1
One thigh and one leg	1
Both legs, feet, and scrotum.....	1
One leg and one humerus.....	1
Both knees and ankles	3
One ankle.....	1

22

The results of antiscorbutic treatment are, almost without exception, very brilliant. Many of these children were treated at first by general tonics, acids, phosphorus, or chlorate of potassium. The result of such treatment, without exception, was unsatisfactory. It seemed in most instances to produce no effect whatever upon the course of the disease. The subsequent improvement under antiscorbutic regimen was therefore especially gratifying to the attending physician. The one thing absolutely necessary to insure a cure is fresh food. Fresh cow's milk is, by all means, the most important element. It is both food and medicine. It should be properly diluted and prepared to meet the requirements of the case. It is well to combine it with a cereal, as Jacobi has suggested. If it requires diluting, barley water may be employed. In warm weather it may be Pasteurized, or even moderately sterilized. Expressed beef juice is a valuable adjuvant in many cases. There seems but little doubt also that orange juice is an element of decided value. Children will certainly recover without it if put upon a

proper diet, but the evidence seems decided that it aids materially in the cure of these cases. It has the merit of being easily administered, for these little sufferers, without exception, take it with marked avidity. When rhachitis is present it is best to administer phosphorus, which may be given in the form of the official elixir. The condition of the stomach and bowels should also receive attention, and tonics are not contraindicated. It should be clearly understood, however, that all drugs are unavailing for the cure of scurvy, and are secondary to milk, beef juice, and orange juice. The swollen and painful extremities may be sometimes relieved by inunctions with oil. The child should be handled with the greatest care, not only to avoid unnecessary suffering, but because there is especial liability to fracture of the bones.

It seems probable that scurvy is increasing in frequency. The more general use of patent and evaporated foods to the exclusion of milk will certainly have the result of increasing the number of these cases. It is quite certain, however, that the disease is not a new one, but has been overlooked or mistaken for some other condition. Excluding the diagnosis of acute rhachitis, rheumatism seems to have been the mistaken diagnosis in the greater number of cases. Several cases have been treated simply as purpura, two or three as ulcerative stomatitis, three as infantile paralysis, and one or two as simple rhachitis. One case within the writer's knowledge was considered to be a sarcoma of the knee; two cases had been treated as osteitis of the knee.

In the light of our present knowledge we may draw the following conclusions:

1. Scurvy may appear at any period of infancy or early childhood, but is most common between the ninth and fourteenth months.

2. The lesions are hæmorrhagic in character, due probably to diapedesis. The most characteristic are subperiosteal hæmorrhages. Hæmorrhages into the muscular tissues, into the skin, and mucous membranes are more or less constant.

3. It occurs in every grade of the social scale, but is more frequent among the rich than among the poor. The neglected child who eats everything at the table may become rhachitic or marasmic, but he obtains enough fresh food to protect him from scurvy. It very rarely occurs in asylums and hospitals, because in recent years feeding in such institutions has been more rational than in many private families.

4. Lack of fresh food is the most important cause. The use of the proprietary foods and condensed milk produces more scurvy than all other causes combined. Even fresh milk in small proportions is not sufficient to insure protection.

5. Anæmia and malnutrition are almost invariably present; a peculiar sallow complexion is common.

6. Scurvy is frequently superadded to rhachitis, but in a considerable number of cases no evidences of rhachitis are present. So-called acute rickets is in most cases, probably in all, rickets complicated by scurvy.

7. Pain is a constant symptom; it develops early and is usually intense.

8. A varying degree of immobility of the extremities is common, and is frequently so marked as to simulate paralysis. This pseudo-paralysis disappears with the subsidence of the scorbutic symptoms.

9. Subcutaneous hæmorrhages, as well as hæmorrhages from the cavities of the body, are very common, but are not necessary to a diagnosis of scurvy.

10. The condition of the gums is characteristic. They

are purplish, soft, spongy, and bleeding, and frequently show decided ulcerations. When the teeth have not been erupted, changes in the gums are usually slight or entirely absent.

11. Painful swelling of the lower extremities is the most constant symptom ; the upper extremities are rarely involved. The thigh is affected more frequently than any other region.

12. Children suffering from scurvy commonly present the following symptoms : Anæmia, intense pain on motion, spongy and bleeding gums, swelling of the lower extremities, usually at the thigh. There may also be purpura or ecchymoses, discharge of blood from the various cavities of the body, and pseudo-paralysis.

13. Scurvy, when untreated, is a very fatal disease ; when recognized and properly treated, a rapid and complete cure is usually effected. The result of antiscorbutic treatment is, in fact, one of the most certain means of diagnosis.

14. Scurvy may be mistaken for rheumatism, stomatitis, rickets, sarcoma, osteitis, and infantile paralysis.

15. Scurvy is a dietetic disease and must be cured by dietetic treatment. Fresh milk, beef juice, and orange juice are the most effective remedies.

No.	Age.	Sex.	Attendant.	Surroundings.	Symptoms.	Lesions, signs.	Diet.	Treatment.	Course.	Remarks.
1	16 mos.	F.	W. P. Northrup, New York.	Private.	Pain on motion; no rickets; anæmia.	Swollen right thigh; spongy gums; no ecchymoses.	Proprietary food almost exclusively.	Correct diet (milk, beef juice), orange juice.	Improved in five days, markedly in ten days, well in thirty days. Died of pneumonia; autopsy.	Had been mistaken for rheumatism.
2	18 mos.	F.	W. P. Northrup, New York.	Foundling asylum.	Pain; anæmia; metallic pallor; temperature, 101°; passages black.	Swelling, both thighs and knee; gums bleeding; "black eye."	Nursed by woman also nursing her own child.	Vegetable acids.		
3	6 yrs.	M.	R. Van Santvoord, New York.	Idiot asylum.	Not reported. Patient a helpless idiot; confined to bed.	Extensive hemorrhages at upper end of both humeri.			Died; autopsy.	Diagnosis made only after death.
4	.....	.....	A. Caillé, New York.	Private.	.....	Subperiosteal effusion of blood; swelling; ecchymoses, skin and gums.			Died; autopsy.	
5	12 mos.	F.	C. H. Richardson, New York.	Dispensary.	Rickets present; blood passed from bowels and stomach; temp., 101°.	Subperiosteal effusion, both legs; spinal curvature; gums soft.	Improper diet; condensed milk.	"Live diet," orange and lemon juice.	Purpuric spots disappeared in three days; case lost sight of. Child well in a few days.	Blood effusion proved by hypodermic needle.
6	2 yrs.	M.	H. Goldenberg, New York.	Dispensary.	No rickets; bleeding from nose, mouth, bowels; hæmaturia.	Feet, legs, scrotum swollen; gums spongy, bleeding; profuse ecchymoses.	Milk diet exclusively.	Fresh vegetables, lemon juice, chlorate of potassium.		Gangrenous spots in pharynx; breath fetid.
7	16 mos.	M.	W. P. Northrup, New York.	Private.	Appeared well nourished until these signs appeared.	Hæmorrhages about one ankle; spongy gums.	Proprietary food exclusively.	Lime, hydrochloric acid, tincture of iron.	Slowly and gradually recovered.	Had been diagnosed as rickets.
8	3 yrs.	....	F. Delafield, New York.	Private.	.....	Characteristic signs of scurvy.	Exclusive meat diet for about three months.	Rational diet.	Symptoms quickly disappeared.	
9	11 mos.	F.	L. E. Holt, New York.	Private.	Extreme marasmus preceding scurvy; pain, tenderness.	Excessive swelling of left knee; gums spongy, bloody; no ecchymoses.	Proprietary food exclusively.		Died after two months; autopsy: hæmorrhages, separation of epiphyses.	Blood effusion proved before death by needle.
10	13 mos.	...	W. F. Lockwood, Baltimore.	Private.	No rickets; rather anæmic; pain in legs on motion; diarrhoea.	Left leg semiflexed, everted; gums spongy, bleed slightly; ecchymoses.	Proprietary food exclusively.	Fresh undiluted milk, potato, orange, peach juice.	Marked improvement in a few days; second visit not required.	Complexion sallow; stools often bloody.
11	11 mos.	F.	G. H. Whitcomb, Greenwich, N. Y.	Private (patient resided in New York).	No rickets; great pain when handled; anæmic; constipated.	Legs partly flexed, rigid, swollen; gums spongy, bleeding; purpura.	Proprietary food exclusively for six months.	Fresh milk, beefsteak, orange juice.	Completely recovered in three weeks.	Had been previously diagnosed as rheumatism.
12	32 mos.	M.	J. J. Reed, J. L. Smith, New York.	Foundling asylum.	Breath foul; anæmic.	Legs tender to touch; gums spongy, bleeding; thigh enlarged.	Unknown; was boarded outside the asylum.	Diet; orange juice.	Immediate improvement.	Had been treated four days for the gums alone.
13	13 mos.	M.	F. M. Crandall, New York.	Private.	Slight rickets; pain when handled; anæmic; diarrhoea; no hæmorrhages.	Swelling of right thigh; spongy and bleeding gums; leg flexed.	Proprietary foods for five months; prepared barley six weeks exclusively.	Milk, beef juice, orange juice.	Improvement in three days; recovery in less than three weeks.	First improvement seen in month.
14	11 mos.	F.	H. L. Taylor, New York.	Private (patient resided in the South).	Pain on movement; anæmic; temperature, 102.5°; no rickets; condition critical.	Swelling of right thigh and ankle; gums spongy, bleeding; purpura.	Condensed milk exclusively.	Milk, beef juice, orange juice.	Improvement at once; spine flexible in two weeks.	Pseudo-spinal paralysis marked; legs motionless.
15	13 mos.	...	H. L. Taylor, New York.	Private (patient resided in the South).	Great pain, especially when moved; well to eleven months.	Swelling of both legs; gums dark, swollen, bloody.	Condensed milk exclusively.	No antiscorbutic treatment.	Died of exhaustion. (Not seen personally by Dr. Taylor.)	Legs motionless; probably pseudo-paralysis.
16	8 mos.	M.	Louis Starr, Philadelphia.	Private.	No rickets; anæmia; pains in legs; pain on handling.	Swelling of knees and ankles; gums spongy, bleeding; legs passive.	Sterilized milk, sugar, and cream.	Plain milk, beef juice, orange juice.	Complete recovery within three weeks.	No paralysis; bowels regular.
17	12 mos.	M.	W. L. Stowell, New York.	Dispensary (tenement).	Rickets present; anæmia; pain on motion in upper and lower extremities.	Subperiosteal effusion left leg, right humerus; gums spongy, bleeding.	.....	Milk only.	Steady improvement; electricity given previously for "paralysis" without result.	Right humerus broken by rough handling.
18	11 mos.	M.	W. L. Stowell, New York.	Private (country).	Anæmia; rapidly developed pain on moving legs; nephritis.	Both knees and ankles hard swollen.	Proprietary food for four months and a half; mixture of cream, sugar, and water.	Milk; syr. ferri iod.; syr. hypoph. co.	Died (probably of kidney lesions).	Was thought to have been rheumatism.
19	4 mos.	M.	W. L. Stowell, New York.	Dispensary (tenement).	Pain on motion; legs and arms passive.	Subperiosteal effusion of legs, thighs, and forearms.	Condensed milk.	Milk, iron, hypophosphites.	Steady but slow improvement.	No true paralysis; followed close upon influenza.
20	9 mos.	F.	W. P. Watson, Jersey City.	Private.	Anæmic; emaciated; severe pain on motion; no petechiæ.	Both legs above and below knees swollen and tender; gums spongy, bleeding.	Condensed milk (four months); then various proprietary foods.	Milk, juice of rare beefsteak, orange juice.	Decided improvement reported after twelve days.	Pseudo-paralysis of legs.
21	12 mos.	F.	O. F. Rogers, Dorchester, Mass.	Private.	Slight rickets; well nourished to eleven months; pain on handling.	Right leg swollen, painful, flexed; gums red, spongy, bleeding.	Proprietary food and sterilized milk.	Unsterilized milk, beef juice, orange juice.	Better on second day; moved leg on third; great improvement on sixth.	Pseudo-paralysis (slight) of right leg.
22	10 mos.	F.	O. F. Rogers, Dorchester, Mass.	Private.	Rickets; pain on handling; excessive purpura (early); temperature, 99° to 101°.	Great swelling above knees and ankles; no teeth; gums not spongy.	Completely sterilized milk and oatmeal jelly.	Orange juice, beef juice, fresh milk (later).	Improved at once; began to move legs in a few days; swellings gone in five weeks.	Was absolutely helpless for six weeks.

No.	Age.	Sex.	Attendant.	Surroundings.	Symptoms.	Lesions, signs.	Diet.	Treatment.	Course.	Remarks.
23	14 mos.	F.	G. W. Goss, Roxbury, Mass.	Private.	Well nourished; very slight rickets; pain on touching legs; restless, fretful.	Swelling of both legs; gums spongy; ecchymosis of vaccination scar (two months old).	Evaporated milk and a proprietary food.	Beef juice, cod-liver oil, phosphorus; diet not changed.	Slight improvement; diet changed to fresh milk; immediate improvement; rapid recovery.	Pseudo-paralysis of legs marked.
24	13 mos.	F.	C. H. Leonard, Providence, R. I.	Private.	Well nourished; no rickets; great pain on touching legs; temperature, 102°.	Legs very tender, not swollen; gums purple, swollen, spongy; no fetor.	Fed five months continuously on peptonized boiled milk.	Chlor. potass., no result; fresh milk, meat juice, orange.	Improved in three days; cured of all symptoms in two weeks.	Spongy gums had been noticed three weeks.
25	11 mos.	M.	W. A. Tremaine, Providence, R. I.	Private.	Rickets present; intense pain on touching legs or ankles.	Knees and ankles swollen; mouth symptoms not clearly stated.	Sterilized milk nine months, then various proprietary foods.	Iron, hypophosphites, etc.	Died; no autopsy.	
26	13 mos.	F.	W. L. Carr, New York.	Dispensary (patient lived in Paterson).	Well nourished; not anæmic; slight rickets; intense pain on motion; bowels loose.	Thighs swollen, not red; gums spongy, bleeding; petechiæ early in disease.	Breast milk six months, then condensed milk and proprietary food.	Fresh milk, beef juice, orange juice.	Rapid recovery; gums better in three days.	
27	9 mos.	M.	W. L. Carr, New York.	Private (patient lived in Indianapolis, Ind.).	Emaciated; anæmic; slight rickets; severe pain; diarrhœa.	Thighs, tibiae, forearms swollen; gums normal (no teeth); no hæmorrhages.	Bottle-fed five months, then given two proprietary foods.	Fresh milk, beef juice, fruit juice.	Rapid improvement; legs regained power in eight days.	Pseudo-paralysis.
28	2½ yrs.	F.	H. R. Purdy, W. L. Carr, New York.	Dispensary.	Poorly nourished; anæmic; no rickets.	Legs and thighs tender; gums bleeding; breath foul.	Poor milk; would not eat vegetables.	Milk, fruit, fresh vegetables.	Symptoms, except anæmia, disappeared in two weeks.	
29	3½ yrs.	F.	C. G. Kerley, New York.	Institution.	Intermittent temperature due probably to malaria.	Purpuric spots; gums swollen, bleeding; ulcerated teeth loosened.	Proprietary food, milk, and bread; would not eat vegetables and meat.	Milk, meat, lemon and orange juice; potass. permang.	Marked improvement in seven days; cure complete in twenty-one days.	First diagnosis: purpura, ulcerative stomatitis, malarial disease.
30	9 mos.	M.	J. E. Winters, New York.	Private.	Rickets, pain.	Legs swollen; skin tense, shiny; gums blue, spongy.	Evaporated milk.	Sterilized milk.	Rapid recovery.	
31	10 mos.	M.	J. E. Winters, New York.	Private.	Moderate rickets.	Both legs swollen, tender; gums spongy, bleeding.	Condensed milk.	Sterilized milk.	Well in one month.	
32	9 mos.	F.	J. E. Winters, New York.	Private.	Pain; fear of being handled.	Swelling over tibiae, slight discoloration; gums blue, spongy around inisor teeth.	Proprietary food from birth.	Sterilized milk.	Well in less than three weeks.	
33	11 mos.	M.	J. E. Winters, New York.	Private.	.....	Eyelids swollen, ecchymotic; gums swollen, spongy, bleeding.	Equal parts of cow's milk and water.	Sterilized milk.	Perfect recovery in three weeks.	
34	10 mos.	M.	L. W. Hubbard, New York.	Private.	Indigestion; extreme pain on movement of legs; irritable.	Hard swelling of one thigh and leg; gums ulcerated; purpura.	Evaporated cream.	Fresh milk, beef juice, orange, cod-liver oil.	Recovery complete in three weeks.	Child undersized; has clubfoot.
35	18 mos.	F.	E. Le Fevre, New York.	Private (country).	Wasting; diarrhœa; pain on movement; irritability.	Swelling of legs; gums inflamed, ulcerated.	Artificially prepared food (proprietary).	Fresh cow's milk, expressed beef juice.	Perfect recovery in two weeks.	
36	13 mos.	M.	E. Le Fevre, New York.	Private (country).	Poorly nourished; diarrhœa; pain on movement; irritable.	Nodular swellings and gingivitis.	Artificially prepared food (proprietary).	Fresh cow's milk, expressed beef juice.	Perfect recovery in two weeks.	

The New York Medical Journal.

A WEEKLY REVIEW OF MEDICINE.

EDITED BY

FRANK P. FOSTER, M.D.

THE PHYSICIAN who would keep abreast with the advances in medical science must read a *live* weekly medical journal, in which scientific facts are presented in a clear manner; one for which the articles are written by men of learning, and by those who are good and accurate observers; a journal that is stripped of every feature irrelevant to medical science, and gives evidence of being carefully and conscientiously edited; one that bears upon every page the stamp of desire to elevate the standard of the profession of medicine. Such a journal fulfills its mission—that of educator—to the highest degree, for not only does it inform its readers of all that is new in theory and practice, but, by means of its correct editing, instructs them in the very important yet much-neglected art of expressing their thoughts and ideas in a clear and correct manner. Too much stress can not be laid upon this feature, so utterly ignored by the “average” medical periodical.

Without making invidious comparisons, it can be truthfully stated that no medical journal in this country occupies the place, in these particulars, that is held by THE NEW YORK MEDICAL JOURNAL. No other journal is edited with the care that is bestowed on this; none contains articles of such high scientific value, coming as they do from the pens of the brightest and most learned medical men of America. A glance at the list of contributors to any volume, or an examination of any issue of the JOURNAL, will attest the truth of these statements. It is a journal for the masses of the profession, for the country as well as for the city practitioner; it covers the entire range of medicine and surgery. A very important feature of the JOURNAL is the number and character of its illustrations, which are unequalled by those of any other journal in the world. They appear in frequent issues, whenever called for by the article which they accompany, and no expense is spared to make them of superior excellence.

Subscription price, \$5.00 per annum. Volumes begin in January and July.

PUBLISHED BY

D. APPLETON & CO., 1, 3, & 5 BOND STREET,

NEW YORK.

